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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/788,497	02/21/2001	Naoki Miyano	0717-0459P	6768

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BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER

KIBLER, VIRGINIA M

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/788,497

Applicant(s)

MIYANO ET AL.

Examiner

Virginia M Kibler

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 04062001
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Watkins et al. (6,597,807).

Regarding claim 1, Watkins et al. ("Watkins") discloses a right infrared camera and a left infrared camera, a right visible light camera and a left visible light camera (Figure 1; Col. 2, lines 13-43), and a first image synthesis processing device for synthesizing data output from the right infrared camera and the left infrared camera and data output from the right visible light camera and the left visible light camera so that a 3-D thermal image and a 3-D visible light image are observed by an observer as overlapping each other (Col. 2, lines 44-67; Abstract).

Regarding claim 7, Watkins discloses a second image synthesis processing device for synthesizing right infrared image data output from the right infrared camera and left infrared image data output from the left infrared camera so as to generate 3-D thermal image data, a third image synthesis processing device for synthesizing right visible light image data output from the right visible light camera and left visible light image data

Art Unit: 2623

output from the left visible light camera so as to generate 3-D visible light image data, and a fourth image synthesis processing device for synthesizing the 3-D thermal image data and the 3-D visible light image data so as to generate 3-D overall image data (Figure 1; Col. 2, lines 44-67; Col. 6, lines 39-46).

Regarding claim 8, Watkins discloses the 3-D thermal image data including a plurality of temperature levels, and a plurality of color tones respectively assigned to the plurality of temperature levels (Col. 6, lines 13-35; Figure 2d).

Regarding claim 9, Watkins discloses obtaining 3-D overall image data, thereby including 3-D coordinate data (Col. 2, lines 13-43). Watkins further discloses displaying the 3-D overall image on a monitor (Col. 2, lines 44-46; Figure 2), thereby converting it into 2-D by transforming the 3-D coordinate data into 2-D coordinate data projected on to a prescribed plane in a 3-D coordinate space.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watkins et al. (6,597,807) as applied to claim 1 above, and further in view of Sogawa (6,396,946).

Art Unit: 2623

Regarding claim 2, Watkins discloses a second image synthesis processing device for synthesizing at least a portion of right infrared image data output from the right infrared camera and at least a portion of right visible light image data output from the right visible light camera so as to generate right synthesis image data (Figure 1), a third image synthesis processing device for synthesizing at least a portion of left infrared image data output from the left infrared camera and at least a portion of left visible light image data output from the left visible light camera so as to generate a left synthesis image data (Figure 1), and a data output device for outputting the right synthesis image data and the left synthesis image data in a prescribed order (Col. 2, lines 13-43). Watkins does not appear to explicitly state a synchronous signal generator for generating a synchronous signal. However Sogawa teaches that it is known to include a synchronous signal generator for generating a synchronous signal (Col. 2, lines 41-58). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the image synthesis disclosed by Watkins to expressly indicate the use of a synchronous signal generator as taught by Sogawa because it is a well known methodology routinely implemented in the art to control synthesizing signals.

Regarding claim 3, Watkins discloses the second image synthesis processing device synthesizes a portion of the right infrared image data and the entire right visible light image data, and the third image synthesis processing device synthesizes a portion of the left infrared image data and the entire left visible light image data (Col. 2, lines 13-43).

Regarding claim 4, Watkins discloses including a monitor for displaying a right synthesis image and a left synthesis image in a prescribed order based on the right

Art Unit: 2623

synthesis image data and the left synthesis image data which are output from the data output device (Figure 2; Col. 3, lines 14-22).

Regarding claim 6, the arguments analogous to those presented above for claim 2 are applicable to claim 6. Watkins disclose a data output device for outputting right infrared image data output from the right infrared camera, right visible light image data output from the right visible light camera, left infrared image data output from the left infrared camera, and left visible light image data output from the left visible light camera in a prescribed order (Col. 2, lines 13-43; Figure 1).

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watkins et al. (6,597,807) in view of Sogawa (6,396,946) as applied to claim 4 above, and further in view of Freeman et al. (6,640,130).

Regarding claim 5, Watkins and Sogawa do not appear to recognize including a polarizer for polarizing the right synthesis image in a first direction and polarizing the left in a second direction different from the first. However, Freeman et al. ("Freeman") teaches that it is known to include a polarizer. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the right and left synthesis images disclosed by Watkins and Sogawa to include a polarizer as taught by Freeman because it enhances signatures for various targets.

6. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watkins et al. (6,597,807) in view of Higuchi et al. (5,129,010).

Regarding claim 10, Watkins discloses a plurality of infrared cameras provided in a direction substantially perpendicular to a direction in which the infrared is directed toward a subject (Figure 1), an image synthesis processing device for synthesizing a

Art Unit: 2623

plurality of thermal image data output from the plurality of thermal image data output from the plurality of infrared cameras so as to generate 3-D thermal image data (Col. 2, lines 13-43). Watkins does not recognize using a slit device including a plurality of slits and an infrared directing device for directing infrared toward a subject through the slit device. However, Higuchi et al. ("Higuchi") discloses that it is known to use a slit device and an infrared directive device for directing infrared toward a subject through the slit device (Col. 1, lines 17-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the infrared disclosed by Watkins to include a slit device as taught by Higuchi because it is well known directing device routinely utilized in 3-D imaging.

Regarding claim 11, Watkins discloses the image synthesis processing device generates 3-D thermal image data based on a difference in shape between heat ray patterns reflected by the subject and respectively imaged by the plurality of infrared cameras (Col. 6, lines 39-46).

### ***Response to Arguments***

7. Applicant's arguments filed 6/17/04 have been fully considered but they are not persuasive.

Summary of Applicant's Argument: Watkins' data output generated by the apparatus for performing stereoscopic method does not produce a perception or image analogous to the perception or image generated by the claimed image synthesis apparatus as recited in claim 1. The left and right stereo sensor of Watkins that detects left and right stereo signals is not analogous to "data output from the right infrared camera and

Art Unit: 2623

the left infrared camera and data output from the left visible light camera and the right visible light camera.” The color stereoscopic image that includes RGB color code that is assigned to the left and right stereo signals of Watkins is not analogous to a “3D thermal image and a 3D visible light image” that are “observed by an observer as overlapping each other.” The left and right stereo signals from the left and right stereo sensors of Watkins is not analogous to a 3D image. The first, second, and third left and right sensor pairs representing different spectral views of the same 3D scene of Watkins is not analogous to a “3D overall image data” that “includes 3D coordinate data.” Regarding claim 10, neither Watkins nor Higuchi disclose “an image synthesis processing device for synthesizing a plurality of thermal image data output from the plurality of infrared cameras so as to generate 3D thermal image data.”

Examiner’s Response: Watkins discloses a plurality of sensors representing different spectral views including a first pair of left and right sensors sensitive in the infrared range and a second pair of left and right sensors sensitive in the visible range (Col. 2, lines 32-35), thereby “a right infrared camera and a left infrared camera; a right visible light camera and a left visible light camera,” as recited in claim 1. Watkins further discloses overlaying registered stereo pair imagery from the right/left infrared cameras and the right/left visible light cameras (Abstract; Col. 2, lines 32-35), or in other words, synthesizing data output from the right and left infrared cameras creating a 3D thermal image and synthesizing data output from the right and left visible light cameras creating a 3D visible light image and overlapping them. Therefore, Watkins discloses the first image synthesis processing device as claimed in claim 1. The Examiner



Art Unit: 2623

interprets the stereo images as 3D images. A 3D image inherently includes 3D coordinate data.

Regarding claim 10, Watkins discloses a plurality of infrared camera provided in a direction substantially perpendicular to a direction in which the infrared is directed toward a scene, or subject (Figure 1; Col. 2, lines 32-35). Watkins further discloses registering stereo pair imagery from the right/left infrared cameras (Abstract; Col. 2, lines 13-43), or in other words, synthesizing data output from the right and left infrared cameras creating a 3D thermal. Therefore, Watkins discloses an image synthesis processing device for synthesizing a plurality of thermal image data output from the plurality of infrared cameras so as to generate 3D thermal image data. Higuchi is not relied on for teaching an image synthesis processing device. Higuchi teaches that it is known to use a slit device including a plurality of slits and an infrared directing device for directing infrared toward a subject through the slit device (Col. 1, lines 17-31). The combination of Watkins and Higuchi meet the recited claim language.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 2623


extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Contact Information***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Virginia M Kibler whose telephone number is (703) 306-4072. The examiner can normally be reached on Mon-Thurs 8:00 - 5:30 and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Virginia Kibler can be reached on (703) 308-4072. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Virginia Kibler  
09/22/04

MEHRDAD DASTOURI  
PRIMARY EXAMINER

